

METHOD FOR TERMINAL ASSISTED MENU  
PRESENTATION OF ADDED VALUE SERVICES  
IN MOBILE COMMUNICATION SYSTEMS

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BACKGROUND OF THE INVENTION

1. Field of the Invention.

The invention relates to a method for terminal assisted menu presentation of value added services in mobile communication systems.

2. Description of Related Art.

Previously, after selecting a value added services node (VAS node), such as a mobile box system, a subscriber of a mobile communication system had to use verbally announced information in the menu to be able to make the appropriate entries and inquiries. This is relatively time-consuming, cumbersome and susceptible to errors because, most of the time, the subscriber has to memorize multiple references (number - function). If he forgets a reference he has to replay the verbal announcements. As a result the process may take a relatively long time.

EP-A-0 659 004 describes a mobile telephone where a certain preset service can be called up by means of using a key (soft key). The allocation of the respective service to said key is predetermined at the time the mobile telephone is manufactured and is stored in the unit itself.

DE-A-196 10 840 discloses a method for loading electronic games in a mobile communication terminal of a mobile communication network.

A subscriber is able to communicate by means of his communication terminal with a control system in the mobile telephone network via a dialog and select at least one game from a number of available games where, after the selection has been made, the data pertaining to the game and/or the game program is transferred by the control system to the communication terminal where it is stored. The stored game can now be executed by the subscriber in his terminal. A transfer of data to the terminal for terminal assisted menu presentation of value added services was not disclosed in this publication.

EP-A-0 772 367 relates to a mobile telephone system having a central service station which is in radio contact with a mobile station and exchanges data with said mobile station. For controlling the data communication the mobile station includes a microprocessor which is controlled by means of a control program and detects and analyzes the short messages sent by the service station. Based on the information contained in the short message the microprocessor modifies the content of its control



program. This method allows technical functions of the mobile station to be released or blocked. Consequently, this method is related purely to influencing the control programs that are already available in the mobile station via the service station, and not to transferring, modifying and executing programs for controlling value added services in the terminal.

The object of the invention is to propose a method for terminal assisted menu presentation of value added services in mobile communication systems.

### BRIEF SUMMARY OF THE INVENTION

The present invention describes the use of objects (programs, data, etc.) in mobile stations to assist in the use of a value added services node. In accordance with the invention the objects are loaded in the ME (mobile equipment) or the SIM (subscriber identity module) of a mobile terminal and are controlled, modified or executed via the wireless interface. The objects assist the operation between mobile station user and the value added services node in that the menu for utilizing the respective value added service is displayed fully or in part on the display of the MS (mobile station) part depending on the actual position in the menu.

The mobile station user is able to initiate functions in the value added services nodes by means of actuating the keys displayed in the menu, such as listening to new messages in the mobile box. When a key is actuated the menu in the display of the mobile terminal is adjusted by the value added services node in accordance with the action that took place in the value added services node. This may also occur as a result of loading a new object or modifying a previously loaded object.

The objects allow a preferably visual menu presentation in the mobile station for the selected value added service making it considerably easier for the subscriber to use it.

The objects are loaded in the mobile station either via the wireless interface or in special loading stations, for example at the dealer's location.

The loading process is initiated via the wireless interface by the user or by events, such as the initial call from/to a value added services node.

The objects contain data and or functions/programs, which are stored and executed on the SIM card and/or in the mobile station.

The objects are capable of adapting to the capabilities of the mobile station, such as the size of the display, black and white or color. Such adaptation takes place either via

polymorphism or by storing the capabilities of the mobile station in the communication network whereby respectively adapted objects are loaded, when required.

The objects are activated in the mobile station either explicitly by the user or implicitly by events such as logging into the mobile telephone network, the receipt of messages (short message, call), etc.

Modifications of the objects are initiated either explicitly by the user or implicitly by the object itself, for example for updating a menu structure.

### BRIEF DESCRIPTION OF THE DRAWING

The invention will be explained below in more detail by means of an example shown in the drawing, in which Fig. 1 is a schematic block diagram of an exemplary system according to the present invention.

### DETAILED DESCRIPTION OF THE INVENTION

Fig. 1 shows a representation of the systems involved. The objects (applications) are held in an object center 9 in a database.

Loading the objects in the mobile station 1 (mobile equipment 2 and/or (U) SIM 3) or modifying the objects takes place via the wireless interface 5 of the mobile telephone network 4 or the interface of a SIM card reader from a service provider 10.

The preferred transmitting mechanisms for the objects via the mobile telephone network 4 are short messages (SM: short messages) or GPRS services.

Short messages (SM) or GPRS services are also used for controlling the objects. Alternatively, DTMF sounds (dual tone multi frequency) may be used by the mobile station 1 if a voice connection exists, for example with mobile box systems. The DTMF sounds are analyzed by the application in the value added services node 7 and are able to initiate respective control messages to the objects via short messages (SM) or GPRS services.

If the objects are to be adapted to the individual capabilities of the mobile station 1 the respective profiles of the capabilities are available either in the home location register 8 (HLR: home location register) of the subscriber or in the object center 9. In the former case the object center 9 has to request the respective profile from the home location register 8.

The SIM application tool kit according to GSM recommendation 11.14 offers the basic functionality of loading programs and data in the mobile station 1 via the wireless

interface 5 and of executing these in the SIM 3. The method described in the invention can be applied with the aid of this basic functionality. However, said method may also be applied on the basis of other mechanisms.

The following describes how objects are loaded and activated on the basis of the SIM application tool kit for assisting in the use of a value added service and should be understood as a potential concrete implementation of the invention.

An object contains an abbreviated form of the menu of a value added service having a fixed allocation between the keys of the mobile station and actions of the value added service.

Upon initial contact (call) of a mobile station with the value added services node 7 objects are loaded in the subscriber identity module 3 (SIM) via the short message service 6. For this purpose, the value added services node 7 initiates a respective procedure in the object center 9 via a message as a result of which the object allocated to the selected value added service is loaded in the mobile station 1.

After the call to the value added services node has been generated an object is activated in that the value added services node 7 sends a short message (SMS) to the mobile station 1. Said short message contains a version number which is compared with the version number of the object available in the mobile station and, if applicable, causes a more up-to-date object to be loaded.

If the user selected a menu item via the keyboard and if this operation has been successfully completed in the value added services node 7, then the value added services node 7 sends a short message (SM) to the SIM 3 whereupon the SIM 3 updates the display in the mobile station 1.

The objects are modified via short messages (SM). This substantially takes place in case of upgrades, *i.e.*, if the menu in the value added services node 7 or the menu of an individual value added service has changed and the object is subsequently adapted accordingly. If required, the object will be erased completely and replaced by a new one.

Alternatively, the objects may be loaded and modified in the subscriber identity module 3 at the location of a service provider 10.

This takes place by means of a SIM card reading and writing device 11 from the service provider 10 by means of which the required data are written into the memory of SIM. The service provider can request the respective object data from the object center 9 and supply these to the SIM card reading and writing device 11.

## DRAWING REFERENCES

- 1 Mobile station
- 2 ME mobile equipment
- 3 Subscriber identity module (SIM, USIM)
- 4 Mobile telephone network
- 5 Wireless interface
- 6 Short message service center
- 7 Value added services node (VAS node)
- 8 Home location register (HLR)
- 9 Object center
- 10 Service provider
- 11 SIM card reading and writing device (interface)